those who require residential care two main types of provision are envisaged: one on traditional lines using the network of residential services which have developed over the years, the other a small area-based service which attempts to meet the needs of all those mentally subnormal persons within the catchment area through a system of interlocking day and residential units.

Several studies involving small and large units should be undertaken, and their effects compared. Some co-ordination between the workers taking part in the different studies would obviously be essential, but it would be sufficient if several groups of workers could agree to collect certain basic data in a form which would make comparisons possible.

In any such trial much attention would have to be paid to the criteria by which the effects of different types of service would be measured. Among these may be mentioned: (1) The problem of diagnosis and the assessment of change. For many aspects of development there already exist well-standardized, usable tools by which these functions could be assessed. They include intelligence tests, various tests of language, tests of social competence, measures of job success. (2) Criteria must be developed for assessing the effects of the handicap and of the services upon the families concerned. Here, too, during the last few years, research workers concerned with the problems of social and clinical psychiatry have made considerable progress in the definition of such problems, and it is probable that operational criteria could be arrived at without too much difficulty. (3) There are economic and administrative considerations. Collaboration would need to be sought with departments of social administration.

No single criterion can be found which would enable a decision to be made as to which pattern of service was 'best'. We must consider instead a multiplicity of factors, measure each of these as accurately as possible, and decide on the basis of the information we gather which of the alternatives our society prefers. This is not so very different from the problem that confronts the investigator who is concerned with the clinical trial of different forms of treatment. We tend to think of the outcome of a clinical trial as something which can be measured on a single scale from best to worst. More often, however, we are faced with side-effects of various sorts and with a complex of factors which vary independently, so that after the last analysis has been made, a decision has to be taken. This is particularly true when we are considering not treatments which cure a disease without leaving after-effects, but measures such as leucotomy or certain kinds of drug treatment which alleviate some symptoms, perhaps make others worse, and do not essentially alter the course of the illness.

Objections can always be brought against proposals for new ways of doing things. Those who consider that in principle the kind of experiment outlined cannot give working answers to questions of social policy would do well to look at other fields in which similar research has been carried out. A notable example is in Sweden where a seven-year experiment was conducted in Stockholm to decide whether comprehensive schools offered greater advantages to pupils of secondary school age than the equivalent of our grammar and modern schools. The city was divided into two halves, one of which tried one system, while the other continued with the existing system. The results were carefully evaluated, and on the basis of the findings an administrative decision in favour of one type of schooling was made. The complexity of the issues was probably as great as would be encountered in the evaluation of a mental deficiency service, yet an answer was arrived at. We think an answer could be found here also.

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A Plan for Experimental Evaluation

The medical, psychiatric, psychological, educational, training and recreational needs of the subnormal living at home are being met by a combination of: general practitioner; Regional Hospital Board; Local Health Authority and Local Educational Authority provisions serving catchment areas within the Hospital Region. However, when for various reasons the subnormal patient is in need of residential care, he is often 'exported' out of the area where his family lives to a hospital for the subnormal or a registered private home serving a much larger catchment area of between 250,000 and 500,000 people. These institutions are therefore often large and many are situated in isolated rural areas. They often provide on one site for children and adults of all grades of defect. In addition to providing residential care they also make available their own separate services to meet the patients' medical, psychiatric, custodial, educational, training and recreational needs. Most of these residential facilities were administered by Local Health Authorities until 1948, when they were taken over by the Regional Hospital Boards. Some Boards (like the Wessex Board) found in 1948 that the LHAs within their borders had not sufficient

places to meet their demands. They found it necessary to use hospitals outside their own Region and to contract beds from registered private homes within the Region. Thus, on July 1, 1963, over one-tenth of Wessex institutionalized patients were in registered private homes and just under a quarter were in hospitals for the subnormal outside the Region. In spite of the variety of the provision of residential care there was overcrowding in the main hospitals – 52% at one and 58% at the other – on the Ministry standard of 60 sq. ft per patient. There were also 123 patients on the waiting list on July 1, 1963.

I describe here the size and nature of the problem of developing and evaluating in parts of the Wessex Region an experimental service by means of which areas of 100,000 people would provide within their borders places for all their own severely subnormal people who need residential care. In these experimental areas the medical, psychiatric and psychological services as well as the educational, training and recreational needs, of the patients would be supplied by the existing local services (expanded where necessary) which already meet the needs of the patients living at home. The residential facilities for patients of county boroughs would be situated in the county boroughs; in rural areas they would be based on the central rural town in the area.

There are two major problems involved in such an exercise: (1) We need large enough samples of comparable subnormal individuals to constitute the experimental and control groups which would enable us to evaluate in demographically comparable areas of the Region the new and the traditional services. (2) We need to know the size and nature of the administrative problem involved, to develop the experimental service.

This paper shows how the epidemiological method of a prevalence survey can provide some answers to these problems. The survey is being undertaken by the Wessex Regional Hospital Board with the collaboration of the Local Health Authorities in the Region. It is sponsored by the Ministry of Health and the Nuffield Hospital Trust Fund. The data apply only to the Wessex Region but some findings appear to be applicable to the whole country.

Selection of Subjects in the Wessex Survey

The Region comprises the counties of Hampshire, Dorset, the Isle of Wight and part of Wiltshire, and the county boroughs of Portsmouth, Bournemouth and Southampton. The survey covered all subnormal people from the Region known to the Mental Health Departments (MHDs) in the Region on July 1, 1963; hospitals for the subnormal within and outside the Region; hospitals for the mentally ill within the Region; general hospitals and hospitals for the chronically ill within the Region; and registered private homes within the Region. The results for Wiltshire have not been computed and are excluded from this report. At the 1961 Census the population of the areas included in this report was nearly 1,750,000.

Terminology

The term 'subnormality' is used to mean all grades of subnormality. Cases have been divided into two broad categories – 'severely subnormal' and 'mildly subnormal'. 'Severely subnormal' are those whose most recent IQ score was below 50; where no score was available we have included in this category people whose scores were unrecordable at testing, who were graded as idiot or imbecile by school medical officers or medical officers in hospitals for the subnormal. Ungraded mongols without available IQ scores (28 cases) have also been categorized as 'severely subnormal'. Those of IQ over 50 and those without available scores who were graded as feebleminded were categorized 'mildly subnormal'.

Size and Composition of Experimental and Control Groups

There is some evidence (Kushlick 1961) that the 'administrative' prevalence at the age of 15–19 years assessed in this way is a good estimate of the 'true' prevalence of severely subnormal survivors to this age. It can be seen (Table 1) that this rate in both rural and urban areas was about 3·7/1,000 and that the prevalence rate for mongolism in both urban and rural areas accounted for just under a third of all severe subnormality.

The prevalence rate of severe subnormality at earlier ages must be at least as high as at 15–19 years – the excess mortality rate among children makes it certainly higher among younger children. Thus, in a community of 100,000 people with an annual birth rate of 16/1,000 (the average in England and Wales from 1948 to 1962), 1,600 children would be born every year and there would be about 25,600 children aged 15 and under; we would expect to find here a minimum of 100 (25·6 × 3·7) severely subnormal children; 30 aged 0–4 and 70 aged 5–15. Two such commu-

Table 1

Prevalence of known severe subnormality (IQ under 50) at age 15–19 years. Wessex Region (excluding Wiltshire) 1.7.63

Area	Population aged 15–19	No. of subnormal	Rate per 1,000		Mongol rate per 1,000
			Total	Range	
County boroughs	46,000	163	3·54	2·38–4·63	1·15
Counties	90,000	346	3·84	3·26–4·03	1·18
Total Wessex Region	136,000	509	3·75	2·38–4·63	1·17

Table 2
Comparison of recent English 'true' prevalence rates of severe subnormality

	Age group	*All IQ under 50 (per 1,000)*	*Mongols (per 1,000)*
Middlesex, 1960 (Goodman & Tizard 1962)	7–14	3·45	1·14
	10–14●	3·61	
Salford, 1961 (Kushlick 1961)	15–19	3·64	0·90
Wessex, 1964			
County boroughs	15–19	3·54	1·15
Counties	15–19	3·84	1·18
(Kushlick 1964)			

● The method used in this survey estimated the 'true' prevalence in the age group 7–14

nities could form the experimental and control areas. Table 2 shows that the Wessex 'true' prevalence rates agree well with those found outside the Region, both for severe subnormality as a whole and for mongolism.

Type and Size of Service to be Evaluated

It has been suggested that the type of experimental service which could usefully be evaluated is that of residential care. The results of the investigation into the current use of services in the Wessex Region are as follows:

Table 3
Numbers of known subnormal children aged 15 and under, by grade. Wessex Region (excluding Wiltshire) 1.7.63

Area	*IQ under 50*	*IQ over 50*	*IQ not known*	*Total*
County boroughs	293	38	10	341
Counties	602	167	35	804
Whole region	895	205	45	1,145

Of 1,145 subnormal children 895 (77%) are severely subnormal (IQ under 50) (Table 3). For convenience, the remaining estimates for children aged 15 and under will refer to known subnormal children of all grades. The children were divided into categories by the type of care they were receiving on July 1, 1963 (Table 4).

Of the 65 children per 100,000 known to us, 12 were living at home and not receiving any training, 30 were living at home and attending day training centres run by the MHDs, 20 were in institutional care and 3 were either in foster care or attending schools or diagnostic units run by the LEA.

If each area of 100,000 people were to make available 23 places for the residential care of its own subnormal children (i.e. places for 20 now in institutions and for 3 now on waiting lists), *all children needing residential care would be provided for.* They could be housed in units of varying size.

Table 4
Place of care of known subnormals (all grades) aged 15 and under. Rates per 100,000 population. Wessex Region (excluding Wiltshire) 1.7.63

Area	*HC*	*HC + TC*	*Inst.*	*Other*	*Total*	*Waiting list*	*Population (1961 Census)*
County boroughs	11●	27	19	2	59	2	574,000
Counties	13●	32	20	3	68	6	1,172,000
Whole region	12●	30	20	3	65	3	1,746,000

HC = Home care, not receiving training
HC + TC = Home care and attending training centre
Inst. = Hospital care and hostels
Other = Guardianship, approved schools, foster homes, &c.
● These rates may be slightly over-estimated, as some of the children may still be attending school

Table 5
Age distribution of 321● subnormals aged 15 and under in residential care. Wessex Region (excluding Wiltshire) 1.7.63

Age	0–4	5–9	10–14	15
%	10	33	45	12

● In this analysis of hospital data some cases under the supervision of Wessex LHAs have been excluded as not coming within the Wessex Region. This accounts for the discrepancy between the total in this Table and that obtained from the rate for children in institutions in Table 4

Table 5 shows that a family unit of 10 of these children randomly selected from institutions would comprise, on average, one pre-school child, 3 aged 5–9, 5 aged 10–14 and one aged 15. In order to estimate the problems of managing such units we collected standardized staff ratings of the physical and social incapacities as well as the behaviour disorders of the children in residential care on the census date.

Definitions: 'Incontinent' children are those who either wet or soil themselves at least once a week. 'Bedfast' children are those who are unable to walk at all without help; they include some children who are able, with help, to walk on the level. Children with 'behaviour disorders' are those who have, to a marked degree, at least two of the following problems: aggression, destructiveness, overactivity, attention-seeking or self-mutilation.

Table 6 shows that a family unit of 10 of these children would on average contain 3 incontinent bedfast children; of the remaining 7 ambulant children, 3 would be continent and present no major behaviour problems, 2 would present the difficulty of incontinence only, and 2 would present at least two major behaviour problems – one of these would also be incontinent. *Thus, nearly a third of the Wessex children now in institutions for the subnormal are ambulant, continent and without major behaviour disorders.*

Table 6
Social and physical incapacities and behaviour disorders among all subnormals aged 15 and under in residential care. Wessex Region (excluding Wiltshire) 1.7.63

Place of care	*Incontinent only* %	*Incontinent and bedfast* %	*Incontinent and behaviour disorders* %	*Behaviour disorders only* %	*None of these* %	*Total* %	*No.*
Registered private homes	15	36	9	6	33	99	66
Hospitals	23	24	15	12	25	99	242
Whole Region	22	26	13	11	28	100	321●

● 13 cases were in Local Authority hostels

Table 6 also shows that in registered private homes the proportion of incontinent and bedfast children (36%) is greater than among those in the hospitals (24%).

Comparison with Other Areas

Table 4 showed that the rates for residential care were similar for Wessex counties and county boroughs. Table 7 shows that they are also similar in other areas of England and Wales.

The proportion of bedfast children in Wessex institutions (26%) also agrees very well with the proportion of non-ambulant children in hospitals (24%) found by J B Tilly, C G Millman & G McCoull who conducted a survey of mental subnormality in the Newcastle Region in 1961. Unfortunately, no comparable rates are available for other types of disability.

Thus, the rate of 23 residential care places per 100,000 of the population can be used as a basis for the planning of a service. However, the 'true' need can only be measured by a detailed examination of the subjects and their families. It is likely to vary with the extent of provision of supporting services. Thus, in Salford in 1961 there were in institutions only 7 subnormal children aged under 15 per 100,000 of the population (Kushlick 1961). In Salford MHD provisions for the mentally subnormal are available on a generous scale (Ministry of Health 1963).

Expansion of Training Facilities in the Experimental Area

The provision in the experimental area of 23 residential places per 100,000 of the total population will meet only the residential needs of the children at present in institutions for the subnormal and those on the hospital waiting list. However, the medical, psychiatric, psychological, educational and leisure facilities for those children living at home will have to be expanded. Table 4 shows the minimum extent to which the education or training facilities will need expansion in the experimental areas. On the survey date 30 known subnormal children per 100,000 of the Region's population attended junior training

Table 7
Children in residential care for the subnormal

Year	*Area*	*Rate per 100,000*	*Age Range*
1961	Newcastle Region	19●	15 and under
1963	Leeds	18	15 and under
1961	London	24	14 and under
1961	Salford	7	14 and under
1963	Wessex counties	20	15 and under
1963	Wessex county boroughs	19	15 and under
1963	England & Wales	17●	15 and under

● Not including those in registered private homes

centres. In 1963 the rate for England and Wales was 33/100,000 (Ministry of Health 1964). A further 20 places will have to be created to cater for the children who would previously have been 'exported' from the area to the distant hospitals for the subnormal and who would now remain within the area. Table 4 shows that in addition 12 subnormal children per 100,000 of the population were known to be living at home and not receiving any training. Many of them were not receiving training because they were regarded as 'hospital' cases, i.e. they were too severely retarded or too physically handicapped for the existing day training centres. The day training facilities for children will therefore have to be expanded by at least 32 (20+12) to 62 places per 100,000 of the population in the experimental areas, to meet only the known needs.

Some of the new training centre provisions will thus have to be designed to meet the needs of physically handicapped, incontinent, disturbed and very retarded children at present regarded by some LHAs as 'hospital' cases. Just over two-thirds of all cases at present in hospital appear to be in this category. (On the census date half of the children in hospital, and just over a third of those in registered private homes, were receiving some form of training.)

Problems for Evaluation

If we are to compare the experimental comprehensive service for an area of 100,000 people with the traditional service in a comparable

population of 100,000, the following are some of the questions to be asked: Do the children in the control and experimental areas achieve the same degree of social and intellectual development? Do they have the same frequency of signs of disturbed behaviour? Have their families the same management problems as assessed by the techniques of Tizard & Grad (1961) or by those of Grad & Sainsbury (1963)? Do their families show the same level of interest in their children as assessed by the number of visits, taking the children home for periods, &c? What are the comparative problems of finding and keeping staff, of administration, and what are the costs? We hope to describe in some detail the types of problem which are inherent in the different forms of administrative structure. Other questions to be answered include the extent to which the experimental service might increase the interest of general practitioners and other specialists in the problems of subnormality. Would the accessibility of these services encourage the integration of the available services in the area? Would the presence of such facilities influence the rate of admission to and discharge from residential care, and the length of stay? Would they lead to actual changes in the processes of admission and discharge?

The evaluation would require a team of sociologist, psychologist, social worker and doctor, and the details of a research design have still to be worked out. No major problems should, however, arise from the delay between the survey date and the setting up of the experimental units for evaluation. Local Authorities, hospitals and registered private homes have kept us informed of all new notifications and of changes which have occurred since the survey date. This will enable us to identify the experimental and control subjects at the time when the evaluation is to begin.

Prevalence of Adult Subnormality in Wessex

Some estimate is also required of the number of residential places needed for adults in such an area because places will be required as the children grow older. This estimate is cruder than that for children because rates after the age of 15–19 are more likely to reflect the availability of services in the areas surveyed, i.e. the 'administrative' rather than the 'true' prevalence.

Table 8 shows that in Wessex an area of 100,000 people could provide residential care for all its severely subnormal adults at present needing hospital care if it were to make available 77 places (i.e. for 74 now in hospital+3 now on the waiting list); for example, in 8 units of 10 beds or 16 units of 5 beds. These rates are consistent for counties and county boroughs within the Region. In 1961 there were 113 severely subnormal adults (15 years and over) per 100,000 from Salford in institutions for the subnormal (Kushlick 1961). The falling Salford population and the rising Wessex population suggest that the rate for England and Wales lies somewhere between the rate for Salford and that for Wessex. Thus, the rate of between 77 and 113 residential places per 100,000 of the population can be used as a basis for planning a comprehensive service providing residential care for all the community's severely subnormal subjects. Increased survival rates among the severely subnormal will probably lead to a higher prevalence among adults in the future.

The Wessex results suggest that there is at present a marked shortage of training centre facilities for severely subnormal adults; 32 per 100,000 are living at home and not receiving training (Table 8). Many of these people may need sheltered employment. The extent to which existing adult training facilities will have to be expanded, if, in the experimental area, the 74 institutionalized subjects are to be housed within the local area, can thus be estimated.

The Mildly Subnormal Adult

The needs of the mildly subnormal adult should be considered separately from those of the severely subnormal. They constitute an epidemiologically distinct category; their difficulties arise more from their psychiatric problems than from their intellectual deficits and their prospects of employment in open industry are relatively good.

Table 8 shows that those from the Wessex Region now occupy just under 60 beds per 100,000 of the population. There is evidence, however, that fewer places will be required for

Table 8

Rates per 100,000 of the population by grade and place of care of known subnormals aged 16 and over. Wessex Region (excluding Wiltshire) 1.7.63

	Area	*HC*	*HC+ TC*	*Inst.*	*Other*	*Total*	*Waiting list*	*Population (1961 Census)*
IQ under 50	County boroughs	32	20	76	5	133	4	574,000
	Counties	33	18	73	3	127	2	1,172,000
	Whole Region	32	19	74	4	129	3	1,746,000
All grades	Whole Region	94	29	132	20	275	4	1,746,000

HC = Home care, not receiving training
HC+TC = Home care and attending training centre
Inst. = Hospital care and hostels
Other = Guardianship, approved schools, residential employment &c

them in the future. The needs of those cases that do arise will best be met by more intensive psychiatric, vocational, educational and social work services than are now available.

Conclusion

In the Wessex Region a rural and an urban area each of total population 100,000 could meet the current residential needs of all their own severely subnormal people at present in institutions for the subnormal and for those on the current waiting list if they were to make available 23 places for children and 77 for adults. The nature of the management problems of the children and the extent to which the existing LHA training provisions will have to be expanded in the experimental areas have been described. A method for evaluating these services has also been outlined.

No definite plan has been put forward for the delegation of administrative responsibilities in the experimental areas. It is clear that any such plan will be complex. It is most important to establish first the strength of the case for the experimental service and the validity of the prevalence data for planning. Once this is generally agreed to by the administrative bodies, discussions can proceed on these crucial details. I believe that the administrative responsibility for the experimental units could, in Wessex, fall on the Regional Hospital Board. This suggestion is being favourably considered.

It is anticipated that children who during crises cannot be managed in the experimental units might require temporary admission to the existing hospitals for the subnormal. We are very conscious that these units are to be experimental and we readily acknowledge that we shall need to depend on the services and experience of the hospitals. We shall certainly need their goodwill if the experiment is to be fruitful.

Finally, it cannot be too strongly emphasized that any attempt to provide local facilities for residential care must be backed by supplementing the services to the families with subnormal people living at home. Many of their problems are yet to be met. If they are not, the provision of local residential facilities might lead to a substantial increase in the demand for residential care. While there is every likelihood that many such demands may be justified, we must see that no efforts are spared to help families manage their problems in the home. The extent of their problems, like the true prevalence of severe subnormality in the community, can only be verified by the provision of a good experimental service and by its evaluation.

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BIBLIOGRAPHY

Ferguson T & Kerr A W (1955) *Glasg. med. J.* **36**, 50
Goodman N & Tizard J (1962) *Brit. med. J.* i, 216
Grad J & Sainsbury P (1963) *Lancet* i, 544
Kirk S A (1958) Early Education of the Mentally Retarded. Urbana, Ill.
Kushlick A
(1961) In: A Report on the Mental Health Services of the City of Salford for the Year 1960. By M W Susser & A Kushlick. Salford Health Department; p 18
(1964) The Prevalence of Recognized Mental Subnormality of IQ under 50 among Children in the South of England, with Reference to the Demand for Places for Residential Care. Paper to the International Copenhagen Conference on the Scientific Study of Mental Retardation, August 1964
Ministry of Health
(1963) Health & Welfare. The Development of Community Care. Cmd 1973. HMSO, London
(1964) Report for the year ended December 31, 1963. The Health & Welfare Services. HMSO, London
Tizard J & Grad J C
(1961) The Mentally Handicapped and their Families. London

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Dr Kushlick's Wessex survey is welcome because it should provide us with facts on which to base plans for a better service for the mentally retarded. No adequate survey of the general population has been undertaken since the Wood report[1] which was carried out at a time when the official policy was segregation of the mentally handicapped rather than integration as at present. Although studies such as the Colchester survey of hospital populations are of extreme value they cannot fully demonstrate the epidemiology and size of the social problem.

Professor Tizard states that a considerable expansion of the service is taking place. This does not apply, however, to in-patient accommodation for the mentally subnormal for whom no increase in number of beds is planned in some regions, according to the approved Hospital Ten Year Plan: nor is there any indication in the Local Authority Ten Year Plan that a consider-

[1]Board of Education and Board of Control (1929) Report of the Mental Deficiency Committee. London